ANIMAL STUDY ON THE EFFECT OF CARBOXYMETHYL CHITOSAN HYDROGEL ON HEALING OF DEEP PARTIAL THICKNESS WOUNDS

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ABSTRACT

Carboxymethylchitosan (CM-chitosan) hydrogel, a cross-linked derivative of chitin was applied as a wound dressing in this study. The effect of CM-chitosan hydrogel on the suppression of neutrophilic migration and wound healing was comparatively evaluated with that of a commercial dressing, Cutinova, hydro, used as control. Twelve guinea pigs were anaesthetized with ketamine and xylazine by intraperitoneal injection. Two mirror image areas of 1x1 cm^2 deep (as deep as the panniculus carnosus) partial thickness incisions were made on both sides of the dorsal area, 0.75 cm apart from the dorsal central line and in between the twelfth rib and iliosacral joint. Each excised wound was separately dressed with CM-chitosan hydrogel and Cutinova, hydro. Pairs of the treated animals were housed for 3, 6, 9, 12, 15 and 18 days, respectively without regular dressing changes. When times reached, they were sacrificed. The wounds were inspected and photographed before being removed for histological investigation. The wounds covered with CM-chitosan hydrogel showed no signs of infection and healed completely within fifteen days. The measure of remaining wound areas by an image analyzer revealed a significant improvement in the wound healing for CM-chitosan hydrogel, especially at the initial stage of treatment. The histological results also indicated that CM-chitosan hydrogel was a better wound dressing as all the wounds dressed with this hydrogel possessed a less amount of inflammatory call infiltration compared to those covered with the control. In addition, the granulation tissue developed much faster in the wounds treated with CM-chitosan hydrogel.

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